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THE INLAND WATERWAYS OF CANADA

"Conservation of Natural Resources, if it means anything, is in the proper utilization of Natural Resources, and when can you find this applicable on so large a scale, as in the common sense use of inland water for improving transportation. This primarily is a business question, and secondarily an engineering question."—HENRY HOLGATE, C. E., Montreal (Chairman, Commission Quebec Bridge Inquiry, 1907).

OUR TRANSPORTATION PROBLEM FRANKLY DISCUSSED

The St. Lawrence-Welland Deep Waterway is a National Necessity. The French River Development and Georgian Bay Canal are Only a Contractors' Project, Commercially Impracticable and Condemned by the Government Engineers' Report.

Why the Railways Oppose an Ocean Waterway to Lake Superior—Sir Robert Perle on Our Western Waterways—Even Georgian Bay Promoters Acknowledge the Merits of the St. Lawrence-Welland Project—Support for the French River Development Secured by Peculiar Tactics and Fallacious Arguments—The Georgian Bay Canal is a Vastly Greater Newcomer to Ditch—Speedy Action Necessary to Meet Competition of Panama and Erie Canals—A Government Commission to Deal With Inland Waterways.

GREAT WATERWAYS UNION OF CANADA

(Berlin, Ontario)

EXECUTIVE COMMITTEE—D. B. Deweller, Chairman, Berlin; J. W. Lyon, Secretary, Guelph; F. B. Scott, Mayor, Oakville; Treasurer, A. Bauer, Waterloo; Geo. C. H. Lang, Berlin; Charles M. M. Graham, Mayor, London; Alexander Stewart, President Board of Trade, Guelph; Geo. A. Dobbie, President Board of Trade, Galt; G. B. Ryan, Guelph; Aln. W. R. Sargoynd, St. Catharines; Controller Church, Toronto.

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Berlin - 1919.

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INLAND WATERWAYS OF CANADA

A FRANK DISCUSSION OF OUR TRANSPORTATION PROBLEM

Transportation is the most important material and economic question before the people of Canada to-day.

RELATIVE CHEAPNESS OF RAIL AND WATER TRANSPORTATION.

The Canadian Government's report on the proposed Georgian Bay Canal (1908) states briefly, and well, the relative cost of water and rail transportation, on pages 398-399, as follows:—

"It is well known now, that transportation by water on a first-class shipway is not only cheaper than by rail, by often much quicker.

It is recognized in the United States that the average movement of freight by rail is only twenty-five miles per day, or about one mile per hour, including of course, all delays at stations and at terminals, where cars are frequently side-tracked for several days. Anyone conversant with the movement of freight on the Great Lakes can see that the average there is considerably above this figure.

Mr. Joseph E. Ransdell, President of the National Rivers and Harbours Congress, in the Annals of the American Academy of Political and Social Science, states:—

"As to the relative cost by the two methods, there can be no difference of opinion. The Interstate Commerce Commission reported that the average cost of moving freight by rail in 1906 was 7.48 mills per ton per mile. The statistical report on the lake commerce for 1906 by Colonel Davis, U. S. E. C., shows it cost to move over 51,000,000 tons through the Sault Ste. Marie canal last year .84 of 1 mill per ton per mile or one-ninth of the average rail rate.

From the best information I can get after a careful study of the subject, I am convinced that watervay transportation in this country, under favourable conditions, costs only about one-sixth as much as the average cost by rail. The above remarks apply to the lakes and rivers and furnish unanswerable arguments for their improvement."

He further states that practically all expenditures on waterways have been profitable investments. They have turned in reduced freight rates to the United States people from 100 to 200 per cent. yearly.

There is no doubt that money expended at present, on well advised improvements of harbours and rivers is a wise expenditure which benefits the entire country."

The above is a sufficient statement of the advantage of water over rail transportation in general. It should be noted, further, that this advantage will be much greater in the case of our Inland and Western commerce, if direct communication be established for large ocean vessels to the head of the Great Lakes. With such vessels the charges for loading and unloading into barges or smaller vessels, and for insurance on elevator storage at intermediate points, wastage and similar losses would be avoided; and in addition, a cheaper rate is offered by vessels with large, as opposed to those with small, capacity.

COMMANDING POSITION OF CANADIAN RAILWAYS.

Our railways, aided by lavish contributions of cash and lands from the Federal and Provincial Governments and by assistance from many municipalities, have achieved, in the past, results quite satisfactory to themselves and dazzling to the public. Their net earnings are increasing rapidly, making them in some instances the envy of the financial world. These railways have not only been the recipients of public favors; they have also enjoyed continuously good business management; and under these favorable circumstances, they have grown into giant corporations, which the very government that helped to create them can scarcely control. Such attempts at control, exercised through the Courts and the Railway Commission, are ignored by "Gentlemen's agreements," or they are neutralized by delay, and even overcome in such cases as the Toronto Union Station and the Western freight rates, by virtual defiance. The natural weapon for regulating these powerful corporations is the exploitation of the waterways.

OPPOSITION OF CANADIAN RAILROADS TO WATER TRANSPORTATION.

Where, as in certain European countries, governments own and operate the railroads, the most is made of natural waterways, because water transportation is the cheaper, and the purpose of such governments in providing either rail or water facilities is simply to give the most advantageous and efficient service to the public. Moreover, where private corporations control a waterway, full advantage is taken of the possibilities, because the exploitation of them is profitable to the corporation. In countries, however, where railways are operated chiefly by private corporations, these companies seek to dominate and nullify the natural advantages which nature has provided. Such, unfortunately, is the case in Canada to-day. By wild and commercially impracticable projects like the Shubenacadie Canal in Nova Scotia, the Chignecto Ship Railway, and the Newmarket Ditch, foisted on the government and public by contractors and politicians with the assistance of optimistic and accommodating engineers, whom like expert witnesses and the proverbial poor we have always with us, the railway corporations are left quite cold. By such schemes, indeed, their interests are not threatened, and they gain time while the country is wasting its money. When, on the contrary, a project which will compel a reduction in traffic rates is under consideration, their activity is at once to be noticed. From this standpoint, it is significant that our railway corporations appear to have paid no more attention to the proposed Georgian Bay Canal, than to any of the former fiascos, such as the Shubenacadie Canal, where on completion it was realized, just as it would in the case of the Georgian Bay project, that there was not sufficient water available for locking purposes; but, on the contrary, to an adequate

St. Lawrence-Welland they have always offered, and offer to-day, systematic and active opposition.

INADEQUATE DEVELOPMENT OF CANADIAN WATERWAYS.

The results of this opposition by wealthy and interested corporations is to be seen not only in the inadequate development of water connection from Montreal to the Upper Lakes. It is quite as noticeable in the neglect to provide water transportation from Lake Superior to the Western provinces via the Lake-of-the-Woods, Lake Winnipeg, the Saskatchewan and other rivers entering the lake last named. Were this route developed, not only would it provide for an enormously increased volume of traffic, especially of grain and coal, but it would result in a great lowering of freight charges by the railroads. In the investigation of the Western freight rates by the Dominion Railway Commission at Ottawa, the reason assigned by the officials of the C. P. R. for the cheaper rates in the East was that water competition in that part compelled the lower rate. Such competition is, in point of fact, the most effective, if not the only, method of regulating railroad rates.

In this connection, and as a comment on the transportation conditions in Western Canada to-day, it is of interest to quote the statement of Sir Robert W. Perks, of London, England:—

"Whenever I have been out West I have been struck with the fact that no organized and effective effort has hitherto been made to use these magnificent waterways, which, after all, are the cheapest form of traction.

I do not know whether you have ever been down the Danube, as I have been, and watched the huge flat barges carrying very often three thousand tons, half a dozen of which are towed down the Danube with a small tug, all loaded up with grain.

The cost of carrying grain by this method is almost infinitesimal; and were a system of this sort adopted in the West, the value to the vast grain growing Prairie Districts would be incalculable."

OPINIONS OF PROFESSORS WILLMOTT AND COLEMAN OF TORONTO, ON WESTERN WATERWAYS.

In reply to inquiries on this subject, Professor A. B. Willmott has made the following statement:—

"Regarding the possibility of a waterway from Lake Winnipeg to Lake Superior, I may say that I have been several times through by canoe from Lake Superior to Lake-of-the-Woods and believe that there is ample water for a barge canal through that district. I thoroughly agree with you that if this could be constructed at any reasonable cost it would have a great influence in lowering rates on the export of grain from the West. I feel confident that a barge canal from Edmonton to Winnipeg would be very easily carried out and at a comparatively small expense. From the mouth of Winnipeg River to Lake Superior would be much more expensive but is still quite possible. You will recall that the old Mackenzie government proposed to utilize these waters and even went so far as to start the building of a lock at Fort Francis. This lock still remains uncompleted. The development of this waterway would also mean the development of a large amount of power.

I thoroughly agree that the government should be urged to make an investigation of the proposition and submit data as to the cost of such a canal system, cost of operation, probable freight rates on wheat, etc."

Professor A. B. Coleman writes:—

"I have read with interest your letter in regard to waterways West of Lake Superior and thoroughly agree with your own views and those of P. cf. Willmott. In earlier years, when in the employ of the Bureau of Mines of Ontario, I canoed over practically all the routes between Lake Superior and Lake-of-the-Woods, and can testify that there is plenty of water for a barge canal and that the amount of excavation for canal purposes would be comparatively small. There are so many lakes and navigable rivers on the route that the amount of actual canal to be constructed would not be great. Lake-of-the-Woods touches Manitoba, so that the wheat fields of the West would be closely approached by a canal reaching the lake.

It is rather surprising that these waterways, chosen as a route to the West, by the Dominion Government under Mackenzie, should have received so little attention of late years."

EFFECTS AND COST OF WESTERN WATERWAYS.

The effect of even a small waterway west of Lake Superior may be illustrated from the results which followed from the construction of the Erie Barge Canal from Buffalo to Albany in the state of New York. On this point, the Hon. Chas. E. Townsend of Washington, D. C., Chairman of the Senate Committee of Coast and Insular Surveys, writes as follows:—

"The Erie Canal, of course, has been in operation a long time, and that it has reduced railroad rates at least one half of what they would have been had it not been for this competition, is practically conceded."

This is in face of the fact that the Erie Canal has only a narrow channel of seven feet depth, and a capacity for barges of 250 tons, that the banks of the canal are of earth, and the towing by teams is comparatively expensive, because necessarily slow, in order to prevent wash on the banks.

The cost of such a waterway between Lake Superior and Lake-of-the-Woods is referred to on page 39 of a Government Report issued in connection with the International Waterways Commission in 1906, by J. G. Sing, C. E. Engineer in charge of the Dominion Public Works Department in Toronto, as follows:—

"In speaking of the canalization of the waters between Lake Superior and the Lake-of-the-Woods, I find, upon reference to the report of the engineers who made the survey, that there are 311 miles of navigable waters between the summit near Lake Superior and the Lake-of-the-Woods, and by the proper arrangement of a series of stop-log dams, and the construction of locks, these waters can be fully utilized for transportation purposes. The navigation, as proposed, would entail very little canal work, as the cutting would not amount to more than one mile in the entire distance of 311 miles.

In the development of this route, there is, under the present natural conditions, plenty of water, if conserved judiciously, for feeders, but it would not be safe to allow a diversion of any portion of the flow in an opposite direction to that intended by nature.

The total cost of opening up this route has been estimated at \$1,500,000, by the engineers who made the survey.

This waterway, if fully developed, would prove a safe-guard against excessive rates being charged on any railway that might parallel it."

The above estimate, it is understood, referred to a 6 foot waterway, but the exceedingly low figure would indicate that the cost of a 12 foot development would be very moderate.

THE PROPOSAL OF WESTERN WATERWAYS IS NOT A NEW ONE.

The proposal is not a new one, and has been before the Government, both as a government and a private undertaking. On Nov. 24th, 1907, a deputation appeared at Ottawa in connection with the St. Lawrence and Great Lakes Improvement, and on that occasion such a development West of Lake Superior was advocated by **Mr. Thos. Conlon** of Thorold, a member of the Dominion Marine Association and one of the oldest vessel owners in Canada.

Sir Wilfrid Laurier in reply to the deputation, is quoted in part as follows:—

"Personally I quite believe in the through waterway from Fort William to the Rocky Mountains, and already a beginning is being made by the Government in making the Saskatchewan River navigable from Edmonton to Lake Winnipeg."

The Government has completed a survey West from Lake Winnipeg and the press reports give the estimated cost of a developed waterway, covering the distance to Edmonton, as between seven and eight million dollars. The City of Prince Albert is developing a water power in the Saskatchewan River, and is constructing locks for navigation. This is mid-way between Edmonton and Lake Winnipeg, and covers the greatest obstruction in that river.

FEASIBILITY OF THE DEVELOPMENT OF THE ST. LAWRENCE- WELLAND ROUTE. OPINIONS OF JOHN KENNEDY, C. E., AND GEN. BIXBY, CHIEF OF U. S. ARMY ENGINEERS.

Speaking of this route, **John Kennedy, C. E.**, the veteran Consulting Engineer of the Montreal Harbor Commission, and an acknowledged authority on the navigation of the St. Lawrence and its connecting waterways, states: "The problem in its present shape, as I take it, is not an engineering one but one of trade and transportation. There is no obstacle in the way that cannot be overcome."

General H. Bixby, Chief of the U. S. Army Engineers, in whose department the matter falls, declared that the opening of the Great Lakes to the sea for ocean craft is merely a matter of money; there is no obstacle in the way that cannot be overcome. He also called attention to the fact that the investment involved in the construction of large vessels is so great that they cannot afford to pass slowly through long, narrow and confined channels, with their attendant dangers, and stated that the suggested improvements in the St. Lawrence would consist of six or eight dams creating small lakes through which the largest vessels would pass at practically full speed. By the suggested improvements, the number of locks would be reduced from twenty-one to eight or six, thereby effecting a great saving in time of transit. The corresponding proposed improvement in the Welland Canal would reduce the number of locks there from twenty-five to six, making this route

incomparably the quickest and the safest to the sea, and providing amply for future commercial development.

HON. CHAS. E. TOWNSEND, CHAIRMAN U. S. SENATE COMMITTEE OF COAST AND INSULAR SURVEY, DECLARES THE DEEP WATERWAY A GREATER PROPOSITION THAN THE PANAMA CANAL. ADVANTAGE IN REDUCTION OF FREIGHT RATES.

The Hon. Mr. Townsend, in speaking to his resolution in the Senate, declared that to him such a waterway was a greater proposition than the Panama Canal. If the project were realized the Interstate Commission would no longer have occasion to pass upon railroad rates from the middle West to the Atlantic; water competition would keep them reasonable.

In speaking of this feature, he cited further the peculiar conditions under which the merchants of Utah and Arizona, when shipping freight across the continent to the Atlantic or receiving freight in return, find it profitable to forward such shipments first to the Pacific in order to secure the competing water-rate via Cape Horn.

Once the Panama Canal is open, the length of the present water route via Cape Horn will be cut more than two-thirds. If the present water rate over the immense distance around Cape Horn is already such a factor in competing freight rates, what will be the competition via the Panama Canal?

THE LATE C. M. HAYS UPON WATER CARRIAGE FROM CANADIAN WEST VIA PANAMA.

In the summer of 1911, the late C. M. Hays, then President of the Grand Trunk and Grand Trunk Pacific Railways, predicted that within five years half the products of the Canadian Northwest would find an outlet via the Pacific Ocean; the change would be brought about by the Panama Canal.

If the view of this transportation expert be correct, a necessary corollary will be that the vessels freighting these products from the Pacific ports of Canada will carry return cargoes thither from Europe at rates that will make serious inroads on our Eastern and inter-provincial trade. The only effective answer to this competition on the Pacific is by waterways which will give to ocean vessels access to the upper lakes. By such a waterway not merely would Canada benefit by the reduction in rates upon shipments to and from Europe; inter-provincial trade would be vastly promoted. Nova Scotia coal, for instance, which now can be shipped profitably only as far as Montreal, would find a market in Ontario and the West.

The benefits to intervening lake ports may be illustrated by the city of Galveston in Texas. By deepening the channel at the entrance to her harbor, access was given at this port to ocean borne commerce. The total cost of this and other harbor improvements at Galveston was some \$10,000,000. The result, according to a report of a board of U. S. Engineers, of December 19th., 1908, has been an annual saving of \$10,000,000 to commerce. The business of the port was increased enormously, and Capt. John C. Oakes, Corps of Engineers of U. S. Army, in his report of December 30th., 1908, declares, "I have no doubt, if a careful study be made of this question, a saving of \$20,000,000 per annum could certainly be shown if not \$30,000,000."

EASE OF ST. LAWRENCE DEVELOPMENT.

The expenditure involved in the development of the St. Lawrence waterway can be met, without the cost of a dollar to the public, by the value of the resulting water owners for industrial purposes. Mr. John Kennedy, C. E., in a discussion of this question at the Nomads' Club in Montreal, is quoted as follows:—

"There are companies to-day, who could take the St. Lawrence River with its water power and give us a free canal to Prescott." i. e. from Montreal to Lake Ontario.

So great in fact, is the demand for power in this section that one Company at the Long Sault Rapids has offered to place dams and locks for deep water navigation at this point, in return for the privilege of developing power; and for the use of the power thus produced this company, besides incurring all the expense of construction, has offered to pay to the Government an annual rental per h. p. per annum.

THE MERITS OF THE DEEP WATERWAY ARE ACKNOWLEDGED EVEN BY THE OPPOSING ORGANIZATION OF GEORGIAN BAY PROMOTERS (THE SO CALLED "CANADIAN FEDERATION OF BOARDS OF TRADE AND MUNICIPALITIES.")

Arthur J. Forward, Barrister, of Ottawa, states in a pamphlet in favour of the Georgian Bay Project, recently issued, "Canada's Can Problem and its Solution, a reply to the Toronto Board of Trade," (page 36):—

"The physical possibility of a deep waterway on the St. Lawrence is beyond doubt." and again, (page 10)

"There can be hardly any doubt that the St. Lawrence-Welland Waterway will, at some time or other, in the future, be enlarged as a matter of international convenience."

The significance of this grudging admission is that Mr. Forward is the Secretary of the organization referred to by Mr. John Kennedy, the veteran consulting engineer above mentioned, in the following extract of a report of a meeting of the national Canadian Society of Civil Engineers in Montreal. This organization, of which Mr. Forward is the Secretary, has assumed the name of "The Canadian Federation of Boards of Trade and Municipalities"; but apparently the only activity of the so called "Federation," and of Mr. Forward as its presumably paid Secretary, has been to sow broadcast throughout Canada, in the shape of pamphlets as well as in the public press, literature in favor of the proposed Georgian Bay Canal, and to organize deputations and to promote generally the interests of that project. The report of the above meeting is in the Montreal Star, March 17th., 1911, as follows:—

"Lively discussion of the Georgian Bay versus the Welland Canal schemes was aroused at the Canadian Society of Civil Engineers' meeting last night after Henry Holgate had read a paper calling for a careful study of transportation problems before committing the country to any one project. The feature of the evening was furnished when John Kennedy, the veteran consulting engineer of the Harbor Commission, declared that a prominent contractor

had been manufacturing public opinion for the last two years in regard to the Georgian Bay Canal, and that immense private interests were pushing the scheme. The Government, he said, was being forced to let the country in for the scheme, and everything else was kept in the background.

As a result, a resolution was passed, providing that the society would urge the Government to study carefully the various schemes affecting the St. Lawrence and that a comprehensive report be issued on the subject before committing the country either to any scheme for damming the river or for canal transportation. The resolution was moved by Professor Herdt of McGill, and seconded by Mr. Kennedy."

THE ST. LAWRENCE-WELLAND DEEP WATERWAY IS NOT AN "INTERNATIONAL CONVENIENCE," BUT A CANADIAN NATIONAL NECESSITY.

In the succeeding portion of this pamphlet, reply will be made to some of Mr. Forward's misleading and unsound arguments, especially concerning the advantage which would be drawn by Canada and the United States respectively, from a St. Lawrence-Welland Deep Waterway. Such a waterway, as Mr. Forward and the interests which he serves, well know, and unguardedly admit, must come. It will come, however, not as Mr. Forward says, because it is an **international convenience**, but because it is a **national Canadian necessity**. The interests of the United States in obtaining a deep waterway through the Lakes and St. Lawrence, in order to carry their own grain and traffic by that route direct from Duluth, Chicago and the Western Lakes to Europe, is indeed such that Senator Townsend and Gen. Bixby urged investigation, and Gen. Bixby has even suggested that the U. S. should contribute towards the cost of the proposed development in Canada, expecting in return only the opportunity to reach the ocean by means of the resultant deep water channel for the largest ships. Canada should not, however, accept such assistance, because it is neither desirable nor necessary. Senator Townsend, Chairman of U. S. Senate Committee of the Coast and Insular Survey, estimates the cost of the proposed St. Lawrence development at approximately 150 millions. The value of resulting water powers would repay more than twice that expenditure, if necessary. It should be noted, moreover, with respect to this American estimate, that the U. S. has constructed the Panama Canal not at twice or more of its estimated cost, but at less than the original estimate. The gentlemen from the Upper Ottawa, the district especially interested in the proposed Georgian Bay Canal, have set us quite another pace, worthy of consideration at this juncture, when they are urging upon the community their pet project at an estimated cost of 100 millions. At an investigation held by the Public Works Department of Ottawa in 1912, concerning the construction of a dam on a tributary of the Upper Ottawa at the outlet of Lake Temiskaming, Mr. Coutlee, C. E., a member of the Board of Georgian Bay Canal Engineers, testified that the estimates for its construction were \$77,000, but that \$350,000 had been expended and the dam was still not completed. If the above dam be a criterion, the real cost of the Georgian Bay project would be many times the original estimate, and for this expenditure the Canadian public would have on its hands an unfinished "serpentine," which, if it were finished, navigation experts say no sane captain would

tempt to navigate in a large vessel. And to such a selfish project, suiting a purely local fancy, "Little Canadians" of this section would give the preference, and would relegate meanwhile, in Mr. Forward's own words, "to some time or other in the future," a practical and comparatively inexpensive project which would make an ocean port of every city on our lakes.

THE CONTRACTORS' CAMPAIGN AND SUPPORT IN THE VICINITY OF THE PROPOSED CANAL.

The favorite and natural field for this agitation is the valley of the Upper Ottawa and of Lake Nipissing, and the district generally, where the canal, if constructed, would lie. A project, which is so flattering in itself and which, if practical, would confer great commercial advantages on the communities residing in the vicinity of the proposed canal, appeals forcibly to local pride and local interests. Many people in this vicinity, for this reason, accept the proposal without further thought, and sincerely and enthusiastically believe in the canal for no other reason than that they want to believe in it. Other residents in this district are shrewder and more subtle. Unlike their enthusiastic neighbors, they know the facts, nevertheless they join quite as loudly in the hurrah for the canal. Their motive is similar to that of the agitating contractors. They know that the canal, if constructed, would be a commercial nonentity; but they know too that during the period of construction times and trade would be good, because money would flow freely, in the Ottawa Valley. Were this money provided by the citizens of the district in question, the attitude of these subtle and shrewd gentlemen would undergo a lightning change. They would demand at once a careful scrutiny of the proposed canal, not as to its engineering feasibility, but as a commercial proposition; and they would require its abandonment unless it were first clearly demonstrated that the benefits to be drawn from the completed work would be commensurate with the expense of its construction.

THE CONTENTION OF THE WATERWAYS UNION.

The members of the Waterways Union are largely from inland points, and are not prejudiced against a northern waterway if it be feasible and commercially practicable. They are aware that there has long existed a traditional, but hazy, feeling that a canal over that route would be a desirable thing. This feeling, however, has rested simply on a casual view of the map, whereas canalisation is a question not of following a direct course as the crow flies, but of altitudes and of water supply especially. Even railways cannot be constructed simply as the crow flies; and were the latter course possible in canalisation, a project equally favorable as to distance, and with many other advantages superior to that of the Georgian Bay Canal, would be the connection of Nottawassaga Bay, via the Humber Valley, with Lake Ontario. In such a connecting canal there would be a deep cut, but a much straighter course and an unlimited supply of water.

While the Waterways Union has no prejudice against legitimate enterprise in the vicinity of the Ottawa River, they object strenuously to the criminal waste of national funds in that or any other district, when the consequence must be the relegation of urgent legitimate enterprises in other sections "to some time or other in the future," if not

to prevent them altogether. The Union opposes also a compromise of the matter, whereby the Georgian Bay Canal would be undertaken at the same time with a deepening of the Welland. In that case, for want of money, the Welland would probably be deepened insufficiently and for the same reason, the improvements along the St. Lawrence and West of Lake Superior, which are the complement of the Welland route from a national and not merely a local standpoint, would be indefinitely postponed. From a financial standpoint, the penalty of waste on an illegitimate enterprise must always be a curtailment of the legitimate; and while a country like Canada can bear without abiding injury a few such minor enterprises as the Trent Valley Canal and the Newmarket Ditch, even Canada cannot waste hundreds of millions with impunity.

BOLSTERING UP A WEAK CAUSE.

At the annual conference of the Ontario Associated Boards of Trade held at Toronto in February, 1912, the North Bay and Temiskaming Boards of Trade had a resolution on the agenda calling for the immediate construction of the Georgian Bay Canal. They apparently realized that for this motion very little support could be secured, and discussion was delayed until the closing hours of the conference. Mr. A. J. Young, of North Bay, then asked permission to withdraw the resolution in favor of the Georgian Bay Canal as a whole, and to substitute one calling only for the improvement of the French River and Lake Nipissing route to North Bay. He pled for harmony between New and Old Ontario, and claimed that the benefits of that development to the Temiskaming and Sudbury district would be very great. Article 3 of this resolution, appearing on page 140 of the published minutes of the conference, reads as follows:—

"That the Canadian Pacific and Canadian Northern Railways, serving what might be called the western portion of the clay belt, the farming section of the Sturgeon Falls district, and the mining sections of the Sudbury district, centering as they do with the Grand Trunk Railway and the Temiskaming and Northern Ontario Railway at North Bay, would have the advantage of a lake port at North Bay and that this would work to the advantage of all lines of private enterprise that might be entered into in that North country."

Mr. Young, speaking to his resolution, made the following statement as to cost, Page 141, Minutes:—

"The French River is about 60 miles long, and the cost of constructing the canal is given by government engineers as somewhere in the neighborhood of six million dollars."

Mr. Young's attention was called to the point that the estimate in question was over fourteen millions and not six. He, however, did not accept this correction.

A committee was appointed to present the conference resolutions to the Dominion and Provincial governments. Mr. Young was a member of this committee, and at Ottawa he quoted the estimated cost of the work at fourteen millions. The actual figures are \$14,274,420, officially increased in 1912 by 20 to 25 per cent., and amounting now, as we may safely assume, to some 20 millions; or, according to the 75 per cent. increase deemed necessary by the promoting company on the entire project (see page 13 below), to 25 millions.

It is of interest to note at this point, that Mr. Cyril Young of Haileybury, in speaking to Mr. A. J. Young's resolution at the above conference, stated candidly that he had canoed over the entire route from Georgian Bay to Ottawa, and while the section from the Georgian Bay to North Bay was capable of practical development, he did not consider that the section of the proposed canal from North Bay Eastward was feasible for navigation.

ATTEMPTS OF NORTH BAY AND TEMISKAMING DISTRICT TO IMPOSE UPON THE REMAINDER OF NORTHERN ONTARIO.

The tactics employed in procuring the above resolution at the Toronto conference represent an effort of the North Bay and Temiskaming sections to hound the government by gradual stages, over a long course of years, (the Trent Valley Canal has been building since 1880,) into the adoption, piecemeal, of the entire Georgian Bay project. This section of Ontario, composed of North Bay and Temiskaming, has never been overburdened with modesty in following up its special interests. The Ontario government in the session of 1912 set aside for the development of Northern and North Western Ontario, the sum of five million dollars. Of this amount, the North Bay and Temiskaming districts, representing only a small fraction of the entire area and population in question, asked, as a starter, for only two million. So preposterous was this request, that the sections of Sudbury and westward to the Manitoba boundary organized a large deputation in order to insure a fair division of this particular appropriation, and to request for their portion of New Ontario a just share of the attention, which North Bay and Temiskaming seek to monopolize.

The same selfish feature is to be found in the proposal in the above resolution to improve the French River in order to centre in North Bay the traffic of extensive districts of that northern country, including Porcupine, Cochrane and even Sudbury. In support of this resolution the claim was made that the saving in freight on coal alone for the districts named would more than pay for the interest on the cost of the proposed development. In point of fact, two thirds of the district in question would be better served as to distance by a lake port on Georgian Bay, either at Little Current, the mouth of the French River, or Key Harbor, where, at small cost, harborage is available with a depth corresponding to an ocean waterway, as opposed to a 22 foot development possible (for 20 million dollars) at North Bay; and this would provide also a longer season of navigation. Included in these two thirds is the mining district of Sudbury with its basic metals of iron, nickel and copper. The present large development of these metals will shortly be increased three or four fold, and the hundreds of millions of tons proved up with diamond drills insure a vast and continuous development in this district to a period of time when the mining district containing the more precious metals may be exhausted and remain only as a memory. By the accompanying diagram with the table of distances, reproduced from a map issued by the Sudbury Board of Trade, it will be seen that Sudbury now has rail connection with Georgian Bay at Little Current via the Eastern Algoma Railway, completed in December 1912, at a distance no greater than to North Bay; and connection can be made, at even a shorter distance, at the mouth of the French River, or Key Harbor. To propose at this late day to carry freight from Sud-

bury to North Bay and thence to ship it back via the French River to Georgian Bay, would be a modern repetition of the achievement of the famous French General, "who marched his army up the hill, and then he marched it down again."

A thirty mile railway link between Porcupine and Ruel on the Canadian Northern, over which line the T. and N. O. Railway have running rights, would place Porcupine and Cochrane and this whole Northern section closer to deep harborage on Georgian Bay than to North Bay, making this connection the natural route for the immense and increasing supplies of coal carried through Georgian Bay to the Grand Trunk Pacific at Cochrane and to other interests in these parts. Such a connection would also be vastly superior, both in distance and efficiency, to the suggested double-tracking of the T. and N. O. from Cochrane to North Bay; and, having regard to the geographical situation and other conditions, its construction is imperatively necessary and anticipated in the near future. Sudbury is the converging point of the extensive section served by the Canadian Northern, the main and Soo lines of the C. P. R., and also of the practically certain connection of the T. and N. O. from Porcupine southward to Sudbury and northward to the G. T. P. at Cochrane. With the above railway link, the shortest route from Cochrane and Porcupine to Toronto would also be via Sudbury, and from Porcupine to North Bay would be 45 miles shorter than the present route over Cobalt. Cobalt itself, it will be seen from the map, could with advantage be connected by rail to Georgian Bay via Sudbury, and it is well understood that the T. & N. O. Railway would in fact have been started at Sudbury instead of North Bay, but for the circumstance that North Bay was at that time the only point having direct connection (via the G. T. R.) with Toronto. There are now, however, two roads, the Canadian Northern and the C. P. R., both having better gradients and curves and giving direct connection by the shorter route from Sudbury to Toronto.

THE ADVANTAGE OF A DEEP WATER HARBOR ON GEORGIAN BAY OVER A 22 FOOT DEVELOPMENT ON FRENCH RIVER TO NORTH BAY.

Besides the advantages in distance as above stated, and shown on the accompanying map, a deep water harbor on Georgian Bay will give the following advantages:—

1. A saving of about \$20,000,000 required to construct a 22 foot canal from the mouth of the French River to North Bay.
2. A saving in the expense of the upkeep and operation of a canal.
3. A longer season of navigation.
4. A depth of harbor to correspond with the proposed 30 ft. (or over) St. Lawrence-Welland waterway.
5. A saving of at least two to three days for return trips from North Bay.
6. Owing to the serpentine course of the French River and its rocky shores, vessel-owners state that the insurance rates on large vessels would be prohibitive and, therefore, fatal to the utility of the canal.

The present government courageously threw overboard the New-market Ditch; and it would be an infinitely greater and more costly

blunder to begin the proposed French River and North Bay development with the ostensible purpose of serving the Sudbury district and its hinterland to Porcupine and Cochrane.

INCREASE AND UNCERTAINTY OF ESTIMATED COST OF THE GEORGIAN BAY PROJECT.

The Government in 1912 had a re-estimate made of the cost of that portion of the project along the French River and through Lake Nipissing to North Bay. The engineers reported that the increase in the estimates for this section, owing to the advance in price both of material and labor since the original estimate in 1908, would be 20 per cent. to 25 per cent.

While it is possible in the case of the Welland Canal, with all the data now available, in an inhabited and cultivated country, with all borings made and strata known, to make an estimate with some reasonable degree of certainty as to cost, any estimate of the Georgian Bay Canal is simply guess work or worse. The Georgian Bay advocates first spoke of 100 millions, and the company holding the charter to build the canal has bonding privileges to that amount. It is, however, very suggestive that this company has now an application before Parliament for an increase in their bonding privileges to 175 millions. This signifies that the original estimate of 100 millions must be raised to 175, an increase of 75 per cent.; and the reasonable conclusion is that their estimates are but a part of what the real cost will be.

The gentlemen in the above company have made no move to begin operations on the canal. Instead, they have made frequent and urgent requests for permission to float their bonds under government guarantee. Were this guarantee granted, the result would practically be that the canal, on its completion by the company, would be turned over to the government, which would thus be compelled not merely to make good the capital expenditure of 175 millions, plus additional issues of guaranteed bonds which would prove to be necessary, but to operate the canal at a great expense, leaving to the company the profits of exploitation and construction.

MISUSE OF AMERICAN EDITORIALS.

During the campaign in New York State for the enlargement of the Erie Canal now nearing completion at a cost, to that state alone, of \$110,000,000, the opponents of the measure used every conceivable means for its defeat, and as usual under such circumstances, they indulged in statements of a character most absurd. Among the irresponsible pleas against the enlargement set forth by newspaper writers were the supposed annihilating results upon the Erie Canal, to be anticipated from the proposed Canal at Georgian Bay. Mr. Forward of Ottawa seizes with avidity on these campaign vaporings as arguments for his pet project, but he must have a poor opinion of the Canadian public if he considers it unsophisticated and gullible enough to swallow them whole and without consideration of their origin and real significance.

THE GEORGIAN BAY PROJECT OFFERS NO ADVANTAGE IN TIME OF TRANSIT.

By the Georgian Bay promoters themselves no claim is made that their project would offer any real advantage over even a 22 foot St.

Lawrence-Welland waterway. This admission is contained in the following extract from the report on the proposed Georgian Bay Canal scheme as submitted to the Government of Canada in 1908, page 320:—

"Time in transit is affected by the length of restricted channels on the route where speed has to be reduced, and by the number of lockages, and consequent delays. A close computation of the speed allowable in the different stretches, with about three-quarters of an hour delay for passage at each lock, gives about seventy hours as time of transit from Georgian Bay to Montreal.

With the advantage of shorter distance between terminal harbors, it is computed that the route will be from one to one and a half days faster than any other existing water route, under present conditions, from the head of the Great Lakes to an open seaport, apart from also having an enormous superiority as to carrying capacity. But as compared with a possible improved system of St. Lawrence canals to a depth of twenty-two feet, assuming that the number of locks would be greatly reduced, and some of the channels widened, probably no practical benefit in time of transit could be claimed, the saving in distance being nearly offset by the larger stretches of lake and wide river navigation which exist through Lake Erie and Lake Ontario route, where higher speeds would be permissible."

This admission was quoted and emphasized in a previous publication by Henry Holgate, C. E., of Montreal, and also in other publications issued by gentlemen connected with the Waterways Union and the Toronto Board of Trade, and it is significant of the methods of the Georgian Bay advocates that in a reprint of the above government report the portion of the above passage in heavier type was altered, in order that it should not so completely disclose the weakness of their case, so as to read as follows:—

"The benefit in time of transit claimed, would naturally be lessened, the saving in distance being offset, to some extent, by the longer stretches of lake and wide river navigation which exist through the Lake Erie and Lake Ontario route, where higher speeds would be permissible."

Mr. Forward has had the courage to claim that the original report was but an interim report, and that the reprinted form gives the final opinion of the engineers. If the reprinted form was actually sanctioned by the engineers, the alteration appears to show a great spirit of accommodation on the part of these gentlemen. Who would doubt that the original statement represents the less prejudiced, in fact the only unprejudiced, opinion of those responsible for the report?

So far then, as the time of transit is concerned, an improved Lake and St. Lawrence-Welland waterway, even with its canals deepened only to twenty-two feet, would afford an equality, if not a superiority, of advantage as against the Georgian Bay and Ottawa River Route. If the canals upon the St. Lawrence-Welland route be deepened sufficiently to permit the passage of ocean vessels, there would result a great further reduction in time which would make the superiority of this route over that of the Georgian Bay still more pronounced.

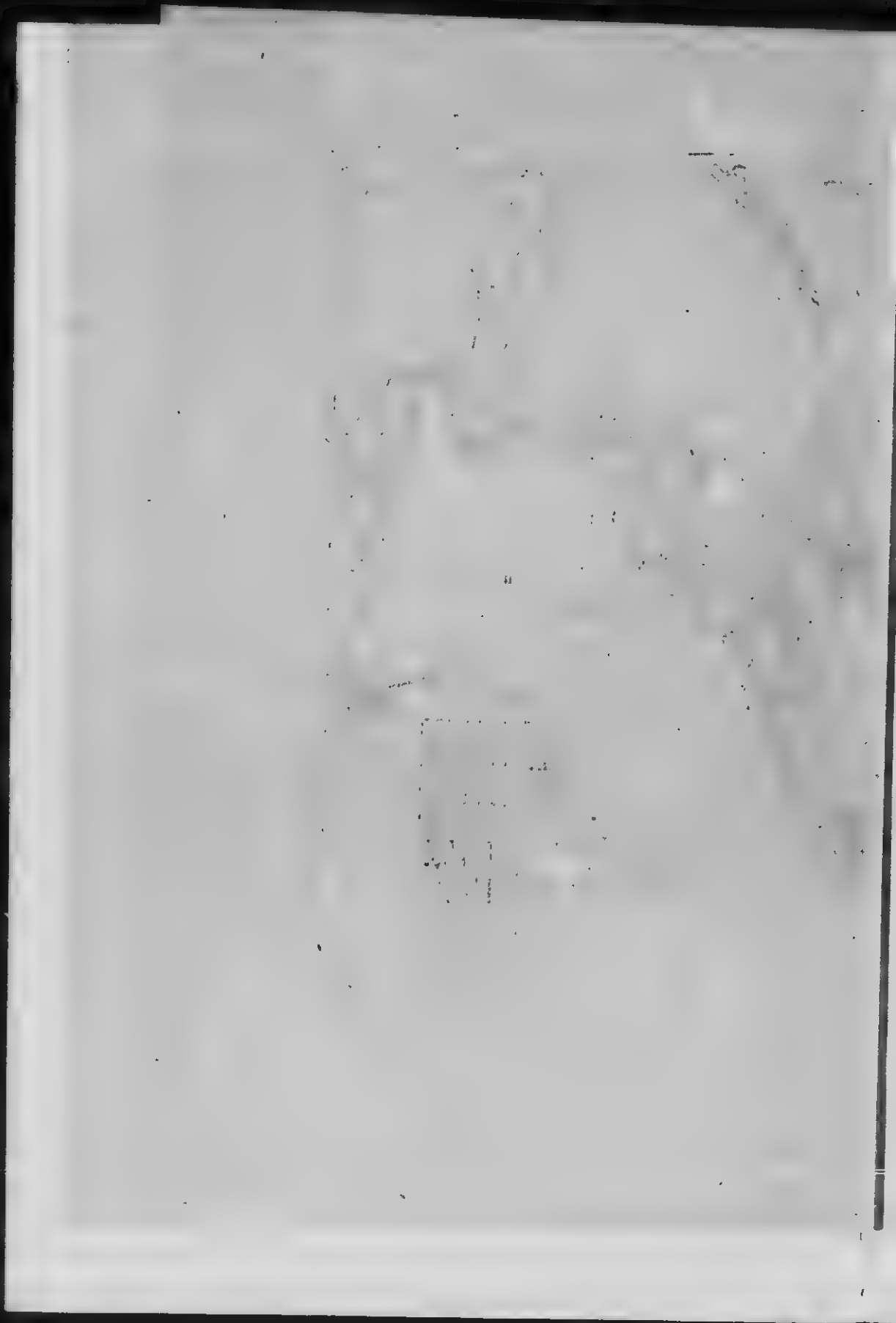
**SENIORITY BOARD OF TRADE
MAP SHOWING
PROPOSED RAILWAY EXTENSIONS
SUDBURY AND PORCUPINE DISTRICTS**

Scale: 36 Miles to 1 inch.

LOW MOUNTAIN
ENGINEERING DISTRICTS
SUDBURY DISTRICT
PORCUPINE DISTRICT







SHORTAGE OF WATER SUPPLY FOR NAVIGATION AT HEIGHT OF LAND AND REMARKABLE EXPENDIENTS FOR OVERCOMING THE DIFFICULTY.

Concerning the problem of navigation over the height of land the Government report 1908, contains the following:—

"It must be stated, however, that the early surveys of 1855 and 1857, by Messrs. Shanly and Clark, the conditions were very different from those of to-day, in regard to Lake Nipissing. Mr. Shanly, in his report dismissed the Trout Lake summit by simply stating that the water supply is inadequate, and proposed to raise Lake Nipissing about sixteen feet, and lower Trout lake to reach this level, thus including Lake Nipissing in the summit reach. This was probable the proper solution at the time, on account of the land around the Lake being practically unoccupied. The shores of Lake Nipissing are so low that the raise of level proposed would naturally flood large tracts of land. At present such a scheme is inadmissible. The number of settlements, villages and towns, apart from the railway interests, which would be affected, are vital objections to it."

In order to provide water for locking across the summit, which Mr. Shanly stated was not available, surveys of the watershed area that could be made tributary to the summit were made by the Government engineers and their report recommends a system of dams by which the entire precipitation during the year could be saved for locking purposes. This, it is estimated, would produce a supply sufficient to lock through ten million tons per annum. Another watershed area was explored, and the report adds that it could be connected with the first one by a system of dams, canals or tunnels; or (Government report, page 210) water might be pumped from Lake Nipissing into the summit reach, thus doubling the supply for locking purposes and affording sufficient water to lock through twenty million tons per year.

Against this maximum of possible supply, must be set the fact that in 1907 over fifty-eight million tons passed through the Soo locks; and further, that the tonnage alone, which passed through Canadian Canals grew from 5,665,259 tons in 1901 to 9,371,744 tons in 1905, and to 42,990,608 tons in 1910, with an additional large increase in 1912. With regard, therefore, to the present need, as well as to the phenomenal increase of traffic which is taking place at this time, a maximum capacity of twenty million tons is totally inadequate.

The report (page 310) admits that in no large canal has the above principle of pumping water into the summit reach been resorted to for supplementing a deficiency in the water supply; but this device, for lifting one's self over the fence by one's bootstraps, ingenious though it is, by no means exhausts the fertility of these gentlemen in overcoming that difficulty. On page 153 of the Report the following statement is found:—

"No water is estimated to be drawn from the summit for power to operate the Trout Lake lock nor for the lighting of the canal from Lake Nipissing through to Trout Lake, or to operate the bridges there. A producer gas-electric plant will supply this demand."

This is in order to conserve for locking purposes, so far as possible, every drop of precipitation in the watershed area throughout the year.

CHANGES IN POSITION TAKEN BY GEORGIAN BAY ADVOCATES.

The plan advised by the Government Engineers was to take the canal over the higher (Trout Lake) level, and to pump and economize the water. Mr. Forward of Ottawa addressed a letter to the *Berlin News Record*, printed in that paper on January 11th., 1913, reading in part as follows:—

"Editor, *Berlin Record*.
Sir:—

In a recent number of the *Record*, you condemn the Georgian Bay Canal on apparently insufficient grounds. Will you, in the interests of fair play, give a place in your columns to the following?

Your objections, briefly summarized, are:—

1. There would be a scarcity of water.
 2. Its usefulness would be problematical.
 3. Further information should be obtained.
1. Plans now in the hands of the Government show that a summit level 58 miles in length is perfectly feasible for a deep waterway navigation. Careful tests have proved that the water supply available on the summit level is between 8,000 and 10,000 cubic feet per second."

The government report, 1908, gives (p. 141) the total distance from the outfall at the Chaudiere on the French River to the foot of Talon Lake (the Eastward end of the cut of the canal) as 68 miles; and it states further (p. 191-192) that by careful study of the conditions and computation of the water capable of storage in dams, it was found that the water supply available for lockage in a summit level formed of Trout, Turtle and Talon lakes, apart from Lake Nipissing, was 556 cubic feet per second, without allowance for leakage, or, if such allowance be made, 435 cubic feet per second; which flow would be increased, by the second series of dams above mentioned, only (p. 193) by 700 cubic feet per second. Therefore, when Mr. Forward states that plans now in the hands of the Government show that a summit level 58 miles in length is perfectly feasible for a deep waterway navigation with a water supply of 8,000 to 10,000 cubic feet per second, he can only mean that the canal is to include in the summit level of that lake or by cutting the canal to that level. With respect to the raising of Lake Nipissing, the report states, however, (p. 190) that the highest point to which Lake Nipissing could now be raised and maintained, without affecting too many interests, is at about elevation 648, or 8 feet above ordinary low water level, and from two to three feet above the highest flood water; and (p. 191) this elevation (water level of 648, less 22 feet for depth of canal=grade level of 626) is 25 feet under the grade level of 651 adopted by the government engineers for the Trout Lake summit. On the other hand, with respect to cutting the canal to the Lake Nipissing level (water level 648, grade 626 or 25 feet below the adopted grade) the report states (p. 191) that this would involve the excavation of enormous quantities of material, the largest proportion of which would be granite of the gneiss variety; and (page 141) that the successful accomplishment of such a cut would be "extremely problematical," and on the same page its practicability is utterly condemned on the following grounds:—

"These cut channels (i. e. channels cut to the Lake Nipissing level) vary in length from 1-8 to 3¼ miles, and are either contained

between high walls of solid rock or in submerged rock cuttings, all being on curves not exceeding 2 degrees. The navigation disadvantage of such perilously confined channels is obvious and would most probably cause a greater loss of time in transit between the Lake Nipissing and what would be the first lock of the Mattawa waters, than by a summit as adopted to the higher grade of elevation 651.0 even with the additional time required for lockage at each end."

Thus, Mr. Forward, when his scheme is condemned by a critic on a necessary ground, attempts to revive the project and if possible to blind the critic by suggesting an alternative which in turn has been already condemned by the government engineers on other grounds. It is by such shifting arguments and by jumping from pillar to post and from post to pillar that the effort is continued to reconcile the Canadian public to an enterprise as expensive as it is useless.

NUMBER OF DAMS AND CURVES IN THE GEORGIAN BAY PROJECT.

The 1908 Report states, page 62:—

"The total number of dams, large and small, required to be built in connection with the project is 45, not including those connected with the formation of storage reservoirs." (These would be very numerous.)

These 45 dams are for regulating purposes. Any one of them, as well as any one of the numerous proposed storage dams, may break and run out. A regulating dam on the Upper Ottawa broke in 1911, and in case of a similar accident to any of the dams of the proposed canal, the entire system of dams, and consequently the canal itself, would be out of commission during the period of repair, lasting several weeks or months, possibly in the height of the navigation season.

Concerning the curves on the proposed canal the 1908 Report states, (page xx) that the number necessary in its course is 116. Of this number 77 are curves of one mile radius, and 39 are curves of a half mile radius. Isham Randolph, C. E., of Chicago, a member of the Panama Canal Commission, states that, by request of the vessel interests, all curves are avoided in the construction of the Panama canal, the turns being made at sharper angles, with straight runs, as being much less dangerous.

Every curve of a half mile radius is, in fact, a standing menace to navigation.

The importance of this question may be inferred from an expenditure of the United States in remedying the dangers from curves till recently existing at the Limekiln Crossing below Detroit. The U. S. Deep Waterways Report, 1900, (Part 1, page 240,) states:—

"The Limekiln Crossing channels, as now constructed, have sharp curves and are dangerous to navigation, and should be straightened and made 600 feet wide. The estimates submitted with this report are based on a channel 600 feet wide, constructed on a continuation across the reef of the tangent east of Bois Blanc Island, as shown on plates 12 and 13."

In 1912 this channel, called the Livingstone Channel, lying in Canadian territory, was completed according to the above recommendation by the U. S. Government at a cost of ten million dollars.

NAVIGATION OF CURVES AND SPEED.

The 1908 Report gives the average speed of transit over the Georgian Bay route as 6 miles an hour, including the time for passing through 27 locks. This speed is 1 mile per hour faster than that allowed for passage through the Suez Canal, which has no locks and only sand banks. According to the U. S. Deep Waterways Report, 1900, (Part 1, page 223) the largest vessels traversing the Suez Canal are those of the Peninsular and Oriental Company. These vessels are much shorter than some now plying on the Upper Lakes; and the size of these lake vessels is now being rapidly increased.

The larger the vessel, the greater is the difficulty of navigation and controlling it in curved and narrow channels. The speeds in the Amsterdam, Kiel and Manchester Canals are all lower than that computed for passage through the Georgian Bay route. On these canals, moreover, all large vessels are towed; and "when large ships meet, one ties up while the other passes" (U. S. Report, 1900, page 228). None of these canals having rocky banks, the above facts bear out the contention of practical Canadian vessel men, that the speed through the Georgian Bay Canal would be nearer 2 to 3 miles an hour than the computed 6 miles. It would undoubtedly mean towing for large vessels.

ICE AND SHORTER SEASON OF NAVIGATION IN THE DEEP ROCK CUTTINGS OF THE GEORGIAN BAY CANAL.

The rock cuttings in this canal run east and west, and on account of this direction, as well as the great height of the cuttings, the depths of ice formed during the winter will not be reached with sufficient directness by the sun to clear the channel for navigation until late in the season. The absence of currents, and the want of water to break up and flush out the ice in the spring add to this difficulty. By reason also of the greater altitude and inland position, the water in this canal would freeze earlier by several weeks, as well as thicker, than on the St. Lawrence route; and on account of the slack water it would remain closed for a month or more later in the spring. This combination of conditions is such that the open season of navigation on this route must be nearly two months shorter than elsewhere on the Lakes.

PROHIBITIVE INSURANCE RATES ON THE GEORGIAN BAY ROUTE.

Vessel Insurance is a prime factor in determining the commercial value of any navigation project.

At the present time the insurance rate on vessels from Port Colborne eastward to Montreal is 50 per cent. higher than from Port Colborne to the Upper Lakes. The difference is due to the small confined channels, with curves, on the eastward route; and on this section of our inland navigation the higher rate is maintained, notwithstanding the fact that the vessels plying to Montreal, being smaller than those on the westward section, are more readily controlled, and therefore more safely navigated, in such confined channels.

Similar difficulties, but in greatly intensified form, will be met by vessel interests in any attempt to use the projected Georgian Bay Canal. On that route the number of curved, confined and rocky channels, dangerous and next to impossible for navigation, is so great that navigation experts scout the idea that insurance could ever be obtained on large vessels using that canal, short of prohibitive rates.

AN IMPROVED WELLAND, EVEN WITHOUT AN IMPROVED ST. LAWRENCE, IS FAR PREFERABLE TO THE GEORGIAN BAY ROUTE.

While an improved St. Lawrence is the ideal and natural condition, an improved Welland Canal, even without an improved St. Lawrence, is far preferable and far cheaper than any sort of canal on the Georgian Bay plan. With an improved Welland Canal large boats can take their cargoes to Prescott, from which point barges in waiting can await wire advice from ocean steamers, and in a brief interval they can lie along side these steamers at Montreal and transfer their cargo direct to the ocean boat while the ocean boat is at the wharf taking on other cargo; whereas, if the large boats went clear to Montreal they would naturally discharge into an elevator, and separate and additional time would be required for the loading of the ocean steamer.

This method of carriage through an improved Welland Canal, while by no means on a par with an ocean waterway, is comparatively cheap, economical and practical, and is superior to the new Erie Barge Canal. Experienced vessel men pronounce the plan in every way preferable to any possible Georgian Bay canal; and the Welland improvement would probably cost but one-fifth or one-sixth as much as the other project.

THE GEORGIAN BAY PROJECT AND NOVA SCOTIA COAL.

Under existing conditions Nova Scotia coal can be sold profitably only as far west as Montreal. The Georgian Bay promoters advocate, as an advantageous feature of their project, that coal could be loaded in bottoms at Sydney and carried profitably via the Georgian Bay Canal to the far west. The Waterways Union claim, on the contrary, that transportation by an improved St. Lawrence and Welland is far cheaper and more practical than by any possible Georgian Bay Canal. If, then, such be the facts, and all unbiassed engineers will so report, this Nova Scotia Coal would go by the St. Lawrence and Welland Canal, if both of these projects were built and constructed. Whether for the transportation of coal from the Maritime provinces westward, or the carrying of grain Eastward, the St. Lawrence Welland route would discount the Georgian Bay Project many times over both as to time of transit, capacity of route and cost of insurance. In any event the ships carrying grain eastward require return cargoes, otherwise they must charge double rates for carrying the grain. The best means of opening a trade for Nova Scotia coal in the Canadian West is to develop a water route, whereby this transfer of grain and coal east and west respectively can be best and most cheaply made; and this route, beyond question, is via a properly developed St. Lawrence and Welland waterway.

A certain amount of anthracite and bituminous coal from Pennsylvania and Ohio will always be required in the west. The natural channel for this traffic is clearly from the Lake Erie ports westward to the Upper Lakes. Since this natural channel for Pennsylvania and Ohio coal is already available at Buffalo and other Lake Erie ports, a development of the St. Lawrence River and Welland Canal could not injure in any way, but would greatly further, the prospect of opening a trade for Nova Scotia coal in Western Canada.

THE WELLAND DEVELOPMENT IS CAPABLE OF MUCH EARLIER COMPLETION THAN THE GEORGIAN BAY CANAL.

Some five or six years have been consumed in making surveys and in preparing exact estimates, plans and other details, for letting the contract of the Welland Canal, a development which is only some twenty-five miles in length and is in a settled and accessible country. No such exact details are compiled and ready for the letting of contracts for the Georgian Bay Canal. This canal, as projected, is some 58 miles in length. In its course, it is necessary first to lock 100 feet up and then some 500 or 600 feet down; and there are innumerable rock cuttings, serpentine in character, with forty-five dams to be constructed and planned, and even many more in contemplation. Undoubtedly it would be the work of many years to complete the plans for actual construction of many parts of this project; and ten years is given as the least possible time in which construction could be completed. Time as well as money is generally under-estimated in works of this kind, particularly in a wild, largely unknown country such as would be crossed by the Georgian Bay Canal. In view of the state of preparation and the difference in the nature of the country traversed by the respective canals, it is a conservative estimate that an improved Welland Canal could be built and in operation in one half to one-third of the time required for the completion of the Georgian Bay Project.

TIME IS OF UTMOST IMPORTANCE.

Canada has been playing with the question of water transportation, while the State of New York and the United States at Panama have been on the job. As a result, in the pending solution of this national problem, time has become for us a matter of the utmost importance. Within a brief interval our country will face, in the East as well as West, a keener competition in trade routes than she has ever hitherto experienced.

The improved Erie Barge Canal, suitable for three thousand ton barges and reducing the cost of transportation from Buffalo to New York by approximately one-half, will be ready for operation within two years; and it will afford advantages with which the present Welland Canal and the St. Lawrence cannot possibly compete. Such a trade route, once established, will be hard to dislodge. Is it conceivable that the national sense of the people of Canada will be content to see practically all the enormous products of our western country, as well as those of the United States, transported through this barge canal to New York, when our great national highway of the St. Lawrence invites the natural transportation by that route to Europe?

Within the same interval of two years the Panama Canal will also be in operation; and this canal, in conjunction with tunnels and other improvements with respect to grades, etc., on our western railways, is expected to draw trade from as far east as Moose Jaw. By the plan suggested in this paper, however, of barge canals from Edmonton to Port Arthur and an ocean waterway from Port Arthur to the Atlantic, the full effect of the Panama competition in diverting Canadian traffic westward, would be confined practically to the section west of the Rockies; while, in a large neutral belt east of the Rockies the residents would reap a distinct benefit. They would have two optional routes, much to the advantage of the great producing province of Saskatchewan and of a large part of Alberta.

THE OBJECTION THAT CANADA WOULD LOSE HER INDEPENDENT CONTROL OF NAVIGATION ON THE ST. LAWRENCE IS FALLACIOUS.

The feasibility of the St. Lawrence-Welland development, and the reasonableness of its cost are admitted even by the interests opposing its construction. For want of better arguments, these interests bring against that enterprise fallacious objections, such as the plea that Canada, in case dams were constructed for the purpose of such development in the St. Lawrence, would have no independent control of navigation in her portion of the boundary waters of that river. The fact is that by the erection of such permanent dams in this section the international situation now prevailing at Sault Ste. Marie would simply be duplicated, without disadvantage either to Canada or to the United States.

At Sault Ste. Marie the rapids constitute a natural barrier to navigation in the stream which forms the international boundary from Lake Superior to Lake Huron. Permanent dams in the St. Lawrence would constitute artificial barriers in a part of that stream forming the international boundary from Lake Ontario eastward. At the Soo each of the two countries has locks upon its own side; on the Michigan side, two are completed, a third is approaching completion and a fourth is projected; on the Canadian, one is completed and a second is planned for early construction. Each of the respective countries controls the locks on its own side and has, therefore, independent control of navigation at that point. In the St. Lawrence also, the respective countries would each have a lock or locks on its own side, and they would, therefore, each have independent control of navigation at these points in the St. Lawrence just as they now have in the St. Mary's River at the Soo.

Division of water for power purposes, in the case of the construction of such dams in the St. Lawrence, would be by international treaty or agreement, and such a treaty or agreement would naturally be a duplication of arrangements already in existence between the two countries regarding a division of power developed from boundary waters at Niagara Falls, the Soo, and Fort Francis in Ontario.

THE SUGGESTED DANGER OF CANADIAN TRAFFIC DIVERGING TO THE PORT OF NEW YORK IS A GEOGRAPHICAL IMPOSSIBILITY.

Another bugaboo raised by the interests in opposition to the development of an ocean waterway to the head of the lakes is the suggestion frequently made that, if the Welland Canal were enlarged in harmony with such a development, the United States would construct a 21 or 30 foot canal from Oswego, or some other point along such waterway, to the Hudson River; and thus would offer a heavier competition than by the present 12 foot Erie Barge Canal from Buffalo for the carriage of Canadian freight to Europe via the port of New York instead of Montreal.

This objection is always made on the gratuitous or silent assumption by the objectors, that a corresponding enlargement in the St. Lawrence would not be made. Such an assumption, it is scarcely necessary to say, is wholly fallacious. Of the entire deep waterway, the enlargement in the St. Lawrence is, in point of fact, the part which is easiest of all

to construct, because the dams which are the essential feature of the development in that river constitute a profitable investment in themselves. At a previous point in this pamphlet it has been mentioned that Mr. John Kennedy, C. E., of Montreal, than whom none can speak with greater knowledge and authority on this point, is on record as stating that power companies could take the St. Lawrence and give us a free development from Montreal to Lake Ontario. The development in the St. Lawrence is, therefore, not merely the natural and necessary complement of a deep waterway throughout the Lakes, but an attractive commercial proposition besides; and once it is constructed, it is idle to talk of competing routes on any canal now built or projected in the State of New York. The route to Liverpool from the Upper Lakes via the Erie Canal and the port of New York is 524 miles longer than via the Welland-St. Lawrence and Montreal; and by reason of this shorter distance and many other great advantages, a through ocean waterway from the head of the Lakes to Montreal outclasses any present or possible route via New York to Europe.

Hon. George Graham, late Minister of Railways and Canals, replying to a deputation that waited on him, stated that he had no fear whatever of any diversion of freight by the Oswego or any other route from the St. Lawrence to New York. He had had the matter investigated and his engineers had reported to him that twelve feet was the maximum of any practical canal connecting the St. Lawrence with the Mohawk or Hudson rivers.

THE CANAL PROBLEM IN THE STATE OF NEW YORK.

The U. S. Government reports show that the different routes possible for canals from Lake Ontario to the Hudson River in the State of New York, have been made the subject of careful investigation by that country. The reports are adverse. They declare that the expenditure necessary in order to achieve any advantages over the 12 foot Erie Canal, now near completion, is too great, and in other respects, the difficulties presented are serious.

For the route from Lake Erie to Lake Ontario via Oswego and the Mohawk Valley to the Hudson River, the U. S. Deep Waterways Report 1900, (Part 1, page 271) estimates the cost of a 21 foot canal development at \$206,358,000 and for a 30 foot canal, \$317,284,000. The increase in prices for such work since 1900, when the estimate was made, would place the cost of the latter on a practical equality with that of the Panama Canal. The annual cost of maintenance, \$2,883,158, would also be excessive. The report states, (1, page 60) that this route is complicated with more difficult conditions than any other open to consideration. There would be a rise (page 243) of 134 feet, and a scarcity of water, at the summit. An adequate supply (page 66, 67) for a ship canal of large capacity can only be obtained by constructing a down grade feeder from Lake Erie to the summit level, or by impounding the surplus water of the streams of the central part of the State of New York in reservoirs and delivering it as needed through a feeder connecting the reservoirs with the summit level of the canal.

By reason of this scarcity of water on the Mohawk route, and the necessity for economy in its use, the report (page 131) expresses a preference for locks for single ships, requiring a smaller supply of water than larger locks. There is however, no suggestion here, as in the Georgian Bay Project, to pump water into the locks from the lower level,

nor any recommendation to instal a gas producer plant for operating purposes, in order to conserve the entire precipitation throughout the year for locking purposes.

On this route there would be no compensating power advantages, and with its great length of confined channels and its numerous curves, the time of transit would be too great, and the insurance problem exceedingly difficult. An alternate route via the St. Lawrence River and Lake St. Francis to the Hudson River, also fully discussed in the 1900 Report, showed an ample water supply for lockage; it was, however, 208 miles longer than the Oswego project and required development in the St. Lawrence along boundary waters for a considerable distance through exclusively Canadian territory; on which, as well as on other grounds, it was dismissed from consideration.

A New York connection via the Richelieu River, below Montreal, and the Chambly Canal and Lake Champlain to the Hudson, was declared by Senator Townsend, in response to a question in the United States Senate, to be a very desirable route to New York, once the St. Lawrence was opened for large vessels. Such a route would, indeed, be preferable to any other projected route to New York. It could, however, carry only American traffic. It could never become a channel of European commerce.

THE FORMER PET ARGUMENT OF GEORGIAN BAY PROMOTERS GOES BY THE BOARD.

The argument, formerly a favorite with Georgian Bay advocates, that their proposition would give an All Red route to our Northwest via the Upper Lakes, has been well nigh abandoned. It was claimed that, in case of difficulties with the United States, this would be a protected route to our West. It would, however, be a protected route only as far as Georgian Bay; in Lake Huron and Superior, it would be, on the contrary, quite exposed; and in any event, in case of hostilities, though these are unthinkable, passage to vessels would be barred at the Soo. The only traffic securely served by the Georgian Bay Canal would be such as originates in the vicinity of that bay. The railways now in operation from ports on Georgian Bay could accommodate many times the freight originating there; and in any event, navigation by that route would be limited to about six months in the year.

Two protected connections would be afforded by the Canadian Northern and Grand Trunk Pacific Railroads through the hinterland of Ontario.

NECESSITY OF SPECIAL DEPARTMENT OR COMMISSION TO REGULATE AND CONTROL MATTERS IN CONNECTION WITH THE INLAND WATERWAYS.

The development and improvements in railway transportation have been so great as to divert attention from an adequate use of the opportunities that nature has given us in our inland waterways. Our railways, notwithstanding this development, have not met the demands of transportation. It is due to the people of Canada that the question of inland navigation be carefully studied and that a scheme of development commensurate with the needs of the country be evolved and

adopted. In European countries, wherever a commercial water highway was feasible, it has been constructed and invariably a benefit has arisen in cheapening and extending transportation. In order that such a scheme may be properly developed in Canada, it must be the work of some definite and responsible body or Department, and the work involved is too comprehensive for a Departmental Minister as matters are now organized. The present Departments are already loaded to the water line with weighty state business. For this reason it has been suggested that the above work be placed in charge of a separate Department of Inland Waterways which would study and develop the problems involved in a scientific way.

The Waterways Union, while acknowledging the undoubted merits of this proposal and its great advance over present conditions, favors rather the creation of a permanent commission to which should be committed the control of the present waterways system, the development of new water arteries and related problems. The manifest advantage of such a commission would be the removal of waterway problems from the arena of politics. Its members, chosen for their special fitness, enjoying secure tenure of office, and untrammelled by political influence, would plan broadly and would conduct all operations with energy and foresight and with a sole view to achieving, not indeed profits, but the same efficiency along all possible lines as is now sought and secured by our railroads. Such a commission, having powers of initiation subject to parliament as well as powers of control, and sharing, moreover, in the operation of our waterways, would be even more important than the present Dominion Railway Commission, the functions of which are purely regulative. Under its administration there would be no need of individual or organized efforts to prevent raids upon the national treasury by exploiters of commercially unprofitable transportation schemes. The Commission, not being dependent upon public suffrage, would secure a careful husbanding of public outlays on national undertakings, since all such projects would be forced into the open, and would be judged by experts solely on their merits.

THREE RELATED PROBLEMS ON WHICH ALL ARE AGREED. SUPERVISION OF PILOTAGE.

Three problems which might with advantage, engage the attention of a Waterways Commission are Marine Insurance, Supervision of Pilotage, and Lengthening of the Season of Navigation. On these questions all interests and sections of the country are in agreement. Canada at present is penalized in insurance rates at times to the extent of several cents a bushel over New York, and this notwithstanding huge outlays made with a view to rendering navigation on the St. Lawrence secure from Montreal to the sea. On this section the Dominion has expended many millions and will soon have a 35 foot waterway to the Gulf, yet there has been no reduction here in the marine insurance rates for the past twelve of fifteen years. The excessive rates are due in part to the recklessness of pilots, e. g. in the matter of speed. In the official inquiry the recent disaster to the *Prince George* was attributed to recklessness, and press reports stated that the pilot, at the time of the disaster, was driving the vessel at the rate of 18 knots an hour in a stretch of the river where the speed permitted under the regulations is only 4½.

GOVERNMENT MARINE INSURANCE.

If the Commission, after correcting the recklessness and other abuses in the present pilotage service, find the insurance rates still maintained at an excessive level, the entire question of marine insurance might well be made the subject of an investigation and be dealt with in a comprehensive manner by the national government through the Commission.

On this question the Honorable George E. Foster, Minister of Trade and Commerce, has made the following observations.—

"As regards the insurance question it is one which in some way must be dealt with. The Government is entirely sympathetic, and will aid so far as it possibly can, any endeavor to solve it, but primarily it is one for the shipping people to take up and press, and also to organize and carry out. Any influence that can be brought towards stirring up sentiment in this direction will be helpful.

It seems of little use to spend immense sums of money in arranging for landways and waterways for the export of products if we cannot get tonnage to our ports to carry them out, and in so far as too high or discriminating insurance rates work against us, we ought to be alert to find a remedy."

The best and indeed only effective solution of this question may ultimately be found in Government Marine Insurance. The Lloyds assert that the insurance cannot be maintained at rates cheaper than those which at present prevail, but this is simply the claim usually made by private corporations in opposition to any movement whereby it is proposed that the state or municipalities should supplant them in their profitable activities. In addition to numerous earlier instances of the groundless nature of such claims, one might cite the recent case, in which private corporations declared that the high voltage proposed by the Ontario Hydro-Electric Commission was technically impossible and, under their contract, commercially unpracticable. Both of these assertions, which were made on exceedingly plausible grounds, have been belied by actual experience. Similar results may be anticipated from an investigation of insurance and other phases of the navigation problem by a proper business Commission.

Lower insurance rates would lead to a greater tonnage plying to the ports in question, and the increased competition between vessels would bring in turn, lower freight rates.

LENGTHENING OF THE SEASON OF NAVIGATION.

The U. S. Marine Association has petitioned the Department in charge at Washington, to prolong the season of navigation from six weeks to two months. With the assistance of ice breakers and of wireless communication such an extension of the season, under proper direction, would be quite feasible. During the extremely cold winter of 1912, a steel tug kept the harbor at Fort William open sufficiently for the changing of vessels to and from the grain elevators for loading grain. At Sault Ste. Marie, in the same winter, the small passenger ferry had no difficulty in keeping a channel open across the river; and in the Russian Baltic ports, under very similar conditions, navigation is kept open practically the year round.

With the construction of large through waterways, a stauncher class of vessels would be developed, fully able to cope with the severer conditions in such an extended season of navigation and also to engage in ocean traffic for the rest of the year. This, according to the U. S. Report 1900, would be an enormous advantage to vessel interests, owing to the large investment involved.

NAVIGATION ON THE COLUMBIA RIVER IN BRITISH COLUMBIA.

A broad treatment of Canadian water transportation will not confine itself to a 32 foot waterway from the Atlantic to the head of Lake Superior, and a 12 foot barge canal thence to Lake Winnipeg and westward, but will give due attention to navigation on the Columbia River in British Columbia. At the Panama Canal Convention held at Calgary in June, 1912, it was stated, according to a report in the *Monetary Times*, that a five cent rate per bushel on wheat from Revelstoke, B. C. via the Columbia, to Portland, Oregon, was possible as against a 19½ cent rate via the C. P. R. from Calgary to Vancouver, although the water route was 200 miles longer. The Dominion government has had a survey made of the Columbia River north of the international boundary, but the report has not as yet been published. The obstacles to overcome north of the boundary are said to be few. Portland has a 28 foot waterway to the ocean and is spending millions on docks. The U. S. Government, it is fully expected, will use part of the Panama Canal dredging machinery, when available, in opening up to navigation the Columbia River south of the boundary.

The West thus shows in these matters a degree of alertness scarcely found as yet in the East. This alertness is greatly to be commended; there is, however, no reason why products of the middle west should go to Europe via our back door, when they can with equal or greater advantage be transported by the natural route eastward.

THE MONEY WASTED ON THE INITIAL STEP IN THE GEORGIAN BAY PROJECT, IF OTHERWISE APPLIED, WOULD SOLVE GREAT AND PRESSING PROBLEMS OF CANADIAN TRANSPORTATION.

The cost of the French River development to North Bay as an initial stage of the Georgian Bay project, is estimated at more than fourteen millions. This estimate, as has been mentioned, is subject to an increase to about twenty millions, an amount which would pay for the entire cost of the waterway development desired from Lake Superior to Lake Winnipeg and thence westward, and would leave in addition a surplus ample for a fund to place Government Marine Insurance on a firm basis, in the event of initial loss from the reduction of Insurance rates.

The operating charges of the Georgian Bay Canal, which, if the canal were constructed, would require to be met even though the use made of the canal were slight, are estimated in the Government Report (p. xix.) at \$900,000 a year. This amount in itself, not to speak of its capitalized value, would also more than suffice to meet any loss that might be incurred in establishing government marine insurance.

THE BROAD FACTS.

Heretofore the development of the country's water-stretches has been viewed chiefly as a subject for the consideration of the engineer, but to-day it is recognized that these are commercial problems first and engineering problems afterwards. Business men ask concerning any project, "Will it pay?" Unless it has withstood the acid test, they do not consider that the project merits public approval or governmental expenditure.

In September, 1912, in a casual conversation with one of the four government engineers whose report on the Georgian Bay Canal forms the basis of that project, the President of the Waterways Union named some of the objections which he, as a layman, saw to the enterprise. The engineer replied: "As an engineering proposition, it is perfectly feasible." Mr. Detweiler then asked, "Is it commercially practicable?" The reply was, "It is not," and at this point the engineer in question drew attention to the fact that in the engineers' report itself it is stated (page 320, according to the original, not the reprinted, report) that as against a 22 foot St. Lawrence development the Georgian Bay project would give no saving in time of transit.

The estimated cost of the Georgian Bay project, as already stated, is now virtually acknowledged by its own supporters to be 175 millions, an amount which experts say must be increased to two to three hundred millions.

These are the broad facts. If we judge the temper of the country aright, our citizens will not saddle themselves and succeeding generations with this huge debt to no purpose. The Dominion government is in the happy position of being able to finance large undertakings, but it is wholly desirable that there should be no waste and no experimentation on public undertakings the commercial impracticability of which is conceded and apparent.

Great Waterways Union of Canada.

Berlin, Feb. 14, 1913.

WATERWAYS UNION MEETING.

A general meeting of the Waterways Union was held on February 14, 1913, in Concordia Hall, Berlin, Ontario. At the forenoon session the President of the Union, Mr. D. B. Detweiler presided. In the afternoon Mayor Euler of Berlin gave an address of welcome and occupied the chair.


Representatives were present from Toronto, Cobourg, Trenton, Guelph, Goderich, New Hamburg, Elora, Elmira, Galt, St. Catharines, Preston, Waterloo, Hespeler and other points. A resume was given of the year's work by the Executive of the Union, and the foregoing report was read. After full discussion, the report was adopted, and the following resolutions were passed unanimously.

Moved by Mr. Lyon of Guelph and seconded by Controller Church of Toronto:

"WHEREAS the Great Waterways Union has given over one year to the careful study of the question and value of Inland Water Transportation to Canada, examining numerous reports issued by the Dominion and United States Governments, having interviewed leading engineers and experts on the subject, including those who have been employed on the surveys, the result of which study and inquiry is embodied in the report now presented to this meeting, all of which will, we believe, strengthen the hands of the Government to carry on and carry out the great work which they have begun, as evidenced by the two millions of dollars in the estimates for construction work on the Welland Canal this year, therefore, **Be it resolved** that this meeting accept and endorse the report herewith submitted.

"FURTHERMORE, in view of the early completion of the new Erie barge canal and the Panama Canal, making time of very great importance, we earnestly urge the Dominion Government that larger appropriations, and all reasonable haste be made to secure the earliest possible completion of an improved Welland Canal.

"FURTHERMORE, we especially urge the Dominion Government to appoint at the earliest possible date a commission, the same to include business men and representatives from Ontario and the Western provinces, to investigate and report upon the development of the St. Lawrence River to a depth of not less than 30 feet for the passage of ocean vessels via St. Lawrence and the Welland Canal route to the head of the Great Lakes; also on the development of waterways from Lake Superior to the Western provinces, and it is further urged and suggested that the commission include the chairman of the Hydro Electric Power Commission, as the larger portion of the proposed developed route lies in Ontario, and involves to a large extent the development and use of hydro-electric power.



"FURTHERMORE, that we respectfully ask the Dominion Government to expend no money for construction work on the French River or Georgian Bay Canal until such route can be shown by reliable and independent engineers to be commercially practicable and thus avoid the risk of almost certain waste of public funds amounting to many millions of dollars.

"FURTHERMORE, that copies of this report be mailed to all members of the Dominion Parliament, to the press, boards of trade and councils generally."

Moved by Controller Church of Toronto, and seconded by ex-Mayor Thorpe of Guelph:—

"THAT this association memorialize the Government of Canada when they are constructing the international deep waterways commission to see that a representative of the Ontario municipalities of the Ontario Power Commission be selected."

Moved by Mr. Alex. Stewart, of Guelph, seconded by Mr. C. R. Hanning, of Preston:—

"THAT in order to provide funds for the expense incident to the carrying on of this work of the Great Waterways Union, an assessment be made in the manner following:—Boards of trade on a basis of 10 cents per member; towns of 5,000 and under, \$10; 10,000 and under, \$15; larger municipalities, \$25; with special appeal to such cities as Toronto, Hamilton, London, etc., cities that are perhaps to directly benefit by the work of the union."

Moved by Alderman Burgoyne of St. Catharines, seconded by J. P. Jaffray of Galt.

THAT this Annual meeting of the Great Waterways Union of Canada desire to record its hearty appreciation of the great and valuable work done by the executive committee of this Union, and of the very comprehensive and exhaustive report upon the inland waterways of this country and the transportation problem, the proper solution of which is one of the most important duties confronting the Government and people of Canada, and we especially wish to express thanks to Mr. Detweiler, the President, and Mr. Lyon, for their great interest shown in the matter.

ADDENDA.

The following memorandum, first issued more than a year ago, is still of great interest dealing as it does with the important matter of the preservation of the rights of the public on the St. Lawrence.

MEMORANDUM RE LONG SAULT DAM AND CANAL IMPROVEMENTS ON ST. LAWRENCE RIVER.

Prepared for the Toronto City Council by Mr. Controller Church, Vice-Chairman of the Board of Control—one of Commissioners of Toronto Harbour—and Organizer of The Great Lakes and St. Lawrence Improvement Association.

The Municipal Council of the Corporation of the City of Toronto passed the following resolution at its meeting on Monday, January 23rd, 1911:—

"The Board recommend that the Council seek the co-operation of the municipalities of Ontario and the Boards of Trade and members of Parliament in opposing the proposed dam on the River St. Lawrence, on the ground of its interference with navigation and future improvements of the St. Lawrence Canal System west of Montreal, and that the Board be authorized to send a deputation to Ottawa in opposition to the said proposal when the matter is before the Government."

REASONS AGAINST THE DAM.

The erection of the proposed Long Sault Dam, on the St. Lawrence River, should be opposed by the municipalities and Boards of Trade on the St. Lawrence Route for the following and other reasons:—

- (1) It will be a serious interference with navigation and the future improvements of the St. Lawrence Canal System west of Montreal, in which Ontario is so vitally interested, as 60 per cent. of Ontario's population is centred on Lakes Ontario, Erie and Huron.
- (2) The Rapids and steamboat channels in the open river will be ruined if it goes through.
- (3) The Long Sault Rapids will be obliterated and the steamboat channel in the open river will be closed up.
- (4) It will ruin passenger steamboat travel on the St. Lawrence River and seriously affect the steamboat trade, as the Rapids are the main feature with the tourist trade on the St. Lawrence.
- (5) The proposed works will affect the water levels and prevent future canal improvements and the proper navigation of the River and Rapids, besides the grave danger to residents and property owners in the vicinity on both sides of the River from floods caused by ice jams.
- (6) The change in levels will bring about low water and prevent future canal improvements and the proper navigation of the River and Rapids.
- (7) It will be a hindrance to the cheap power policy of Ontario for ever on the St. Lawrence.

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(8) If Canada and Ontario does not become active at once the United States Congress may pass the scheme and bills of the power companies, and Canada's and Ontario's interest on the St. Lawrence River will be for ever obliterated. The Government of the United States will likely act with regard to the bills this week unless a united protest is made.

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(9) Experts should take stock of the River and of the various applications for power which should be regulated by an international tribunal after a survey of the River has been made. No expert survey of the River has been made since 1854, and the detailed conditions should be investigated.

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(10) Canada should prevent the export of power except on carefully defined regulations under the Hydro-Electric Commission.

(11) Ontario, which has (it is estimated) contributed 56 per cent. of the taxes since Confederation, is entitled to improved canal facilities west of Montreal to fit in with the proposed deepening of the Welland Canal, and the dam, if constructed, will render any improvements of the Canal System west of Montreal impossible. Deeper and simpler canals to Lake Ontario are required and must come in the future.

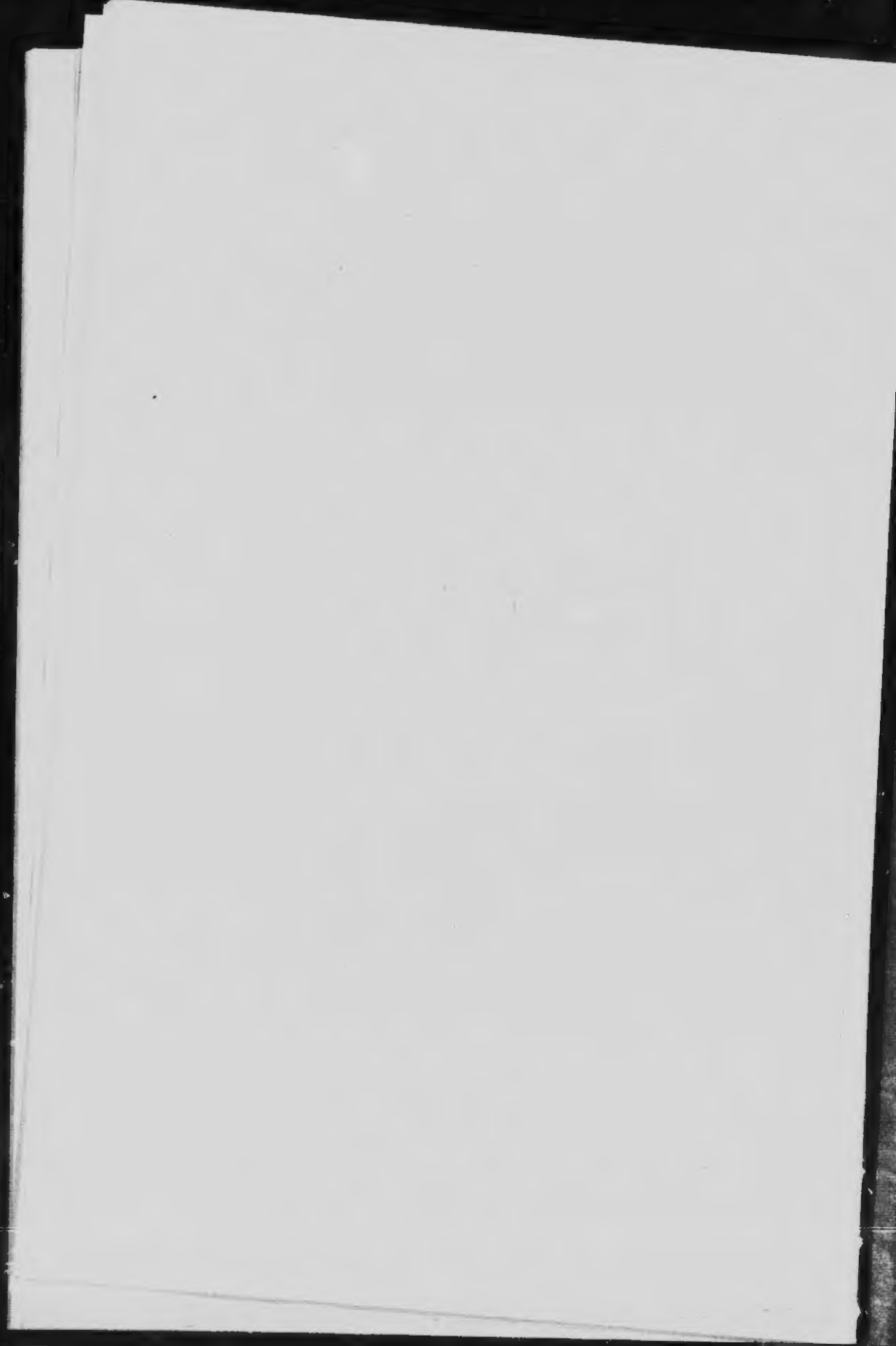
(12) The new surveys made should show the effect of the dam on (a) the Canal System; (b) the Power Companies; (c) Navigation; and (d) the Port of Montreal.

(13) No surveys of the River have been made since 1854, when a report was made in connection with the proposed canal from Lake Champlain to the St. Lawrence for J. Cabot, Chief Commissioner of Works.

(14) The power interests of Ontario should be paramount and protected from invasion and annihilation by American Corporations, and the Hydro-Electric Commission should regulate matters.

(15) The Dominion and Ontario Governments should protect the municipalities and their cheap power movements, and the interests of navigation should not be sacrificed nor left to the United States nor the International Deep Waterways Commission exclusively; but Canada's interests and Ontario's should be conserved at once before it is too late.

(16) If this scheme is allowed to go through it will give the private corporation, controlled by the Aluminum Reduction Company of the United States, complete control of the entire flow of the St. Lawrence River.





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